(No Model.) 3 Sheets—Sheet 1.

A. J. SHAW.

ELECTRICALLY OPERATED HOISTING MACHINERY.

No. 600,092. Patented Mar. 1, 1898.

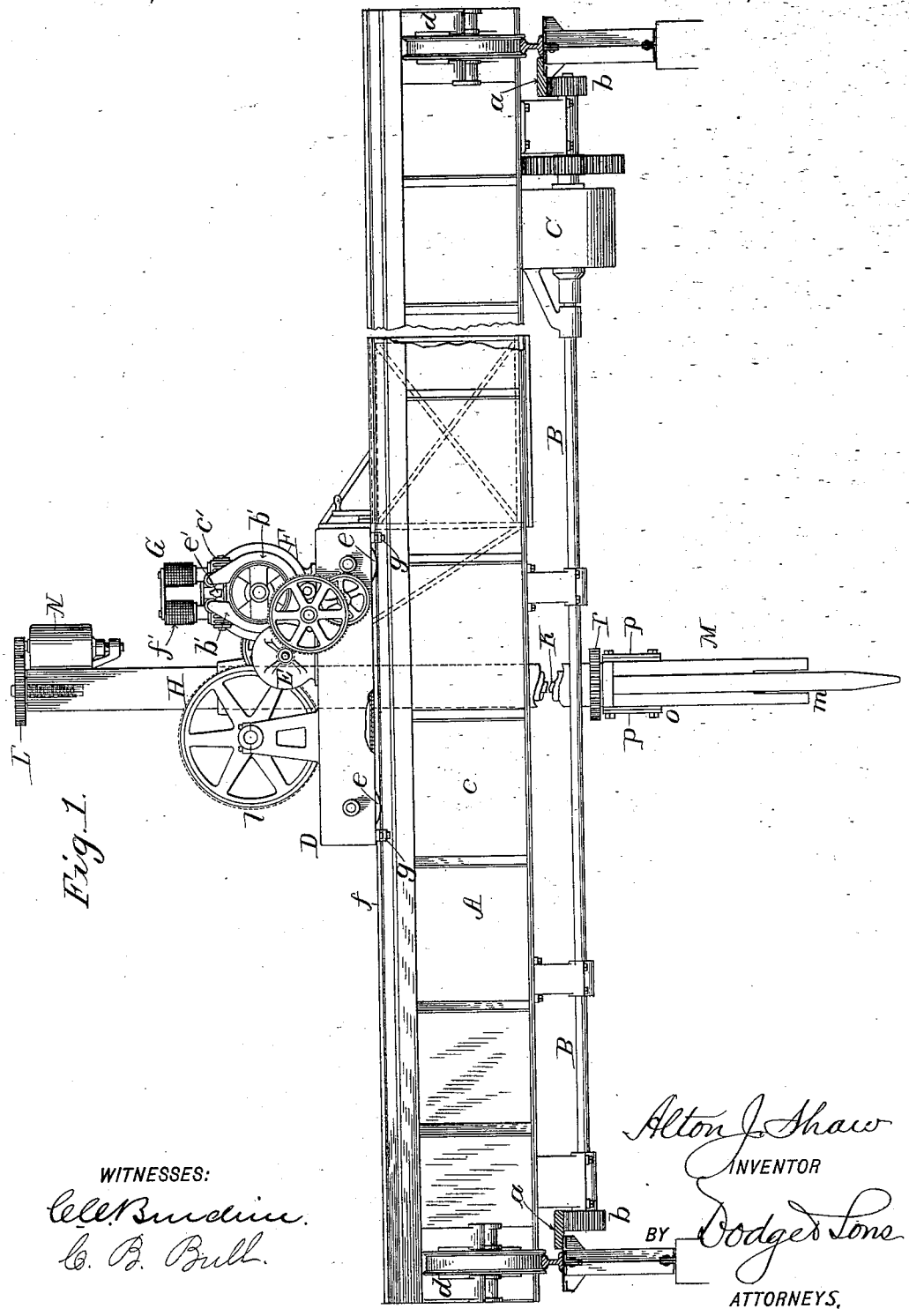

Fig. 1.

WITNESSES:

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Fig. 2.

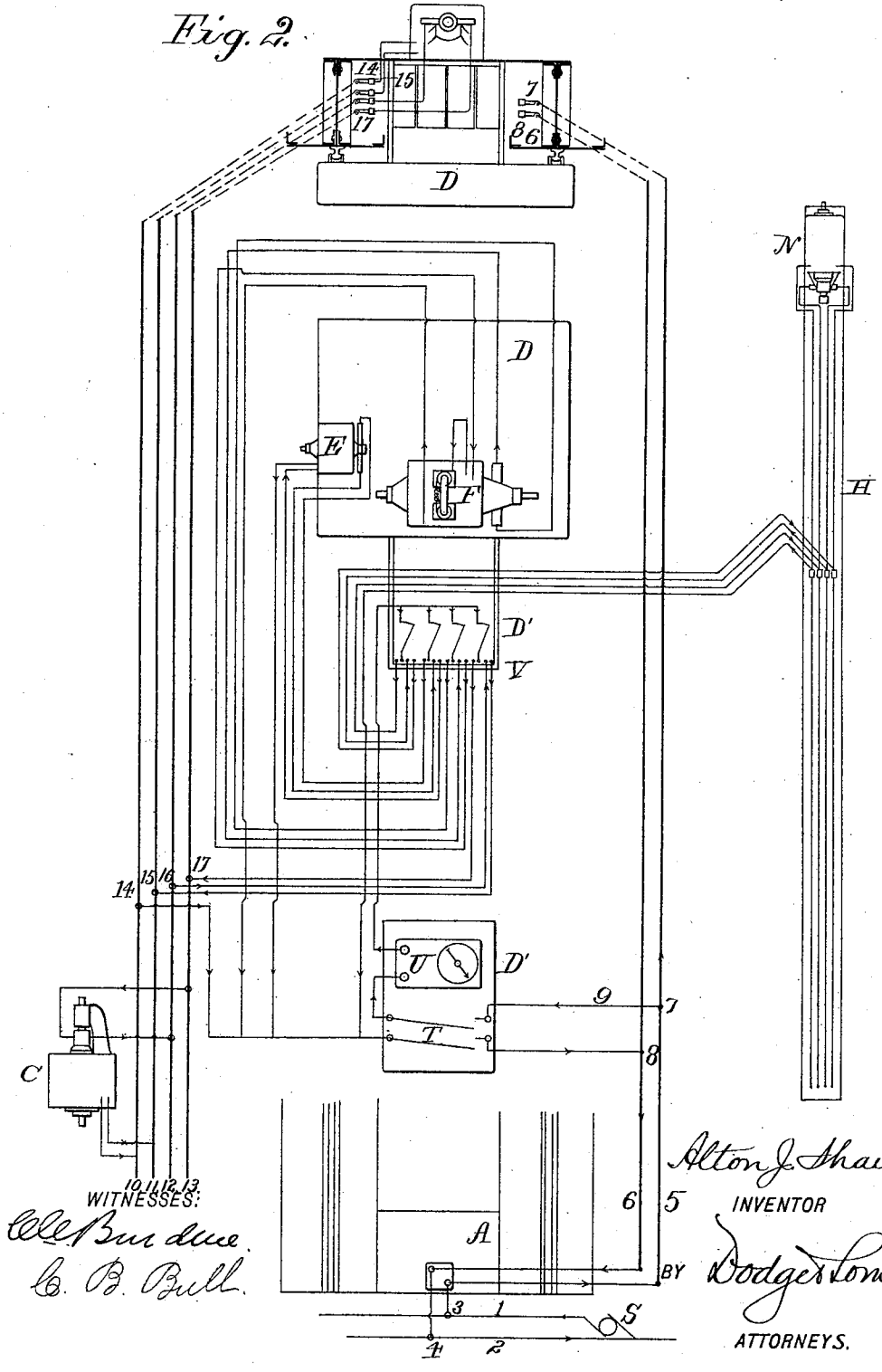

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Fig. 3.

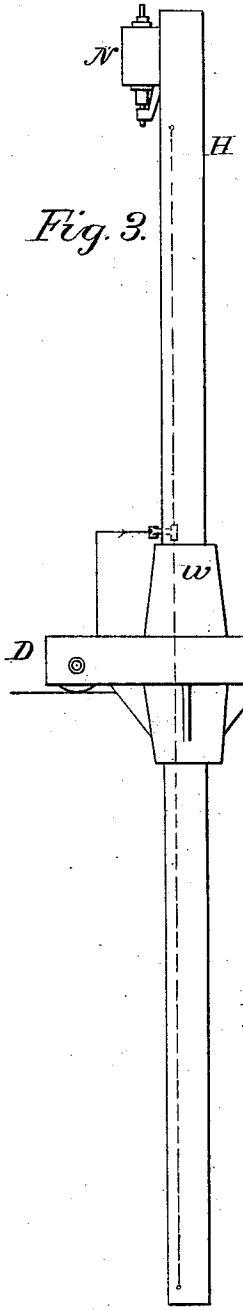


Fig. 4.

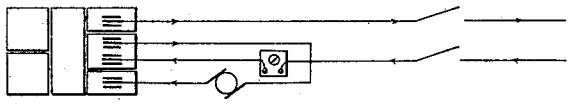


Fig. 5.

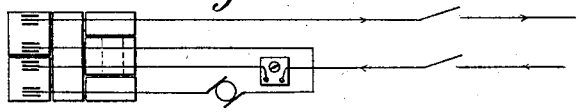
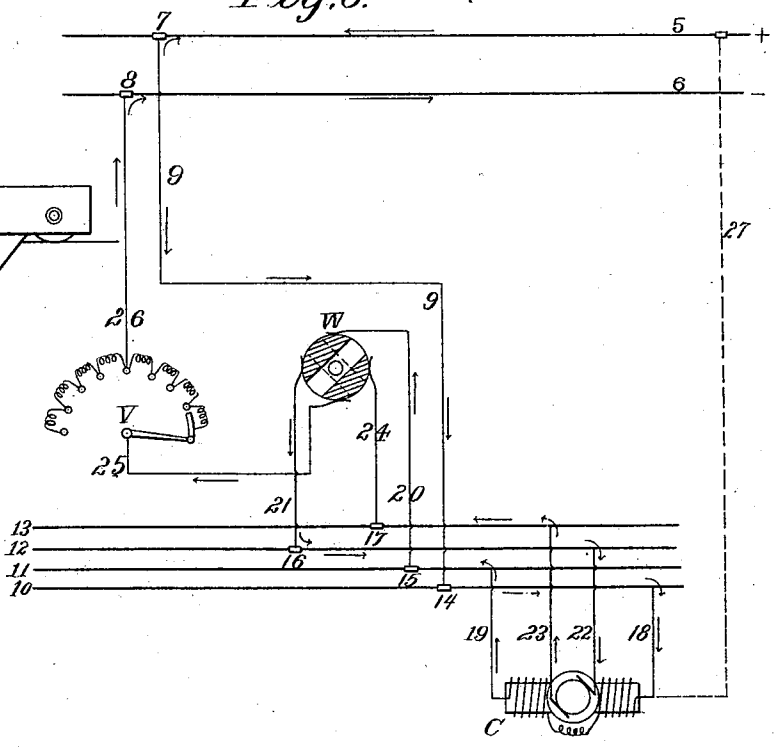


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALTON J. SHAW, OF MUSKEGON, MICHIGAN, ASSIGNOR TO THE SHAW ELECTRIC CRANE COMPANY, OF SAME PLACE.

ELECTRICALLY-OPERATED HOISTING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 600,092, dated March 1, 1898.

Original application filed May 6, 1893, Serial No. 473,287. Divided and this application filed January 16, 1894. Serial No. 497,067. (No model.)

To all whom it may concern:

Be it known that I, ALTON J. SHAW, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Hoisting Machinery, of which the following is a specification.

My invention consists in a novel arrangement of electrical circuits and connections as applied to hoisting machinery, and particularly as related to a traveling-bridge crane in which several electric motors are controlled from a trolley movable upon the traveling bridge of the crane.

The present application is a division of one filed in my name on the 6th day of May, 1893, Serial No. 473,287, and this division is made in compliance with requirement of the Patent Office.

In the drawings forming part of this application, Figure 1 is a side elevation of a portion of the bridge of a crane embodying my invention, showing the trolley and attendant parts; Fig. 2, a diagrammatic view illustrating the circuits or manner of running the electric conductors; Fig. 3, an elevation of the hoisting beam or bar of the crane which carries certain of the conductors; Figs. 4 and 5, views illustrating the path of the current under different adjustments of the reversing-switch; and Fig. 6, a diagram illustrating the construction and arrangement of the reversing-switch in connection with the conductors, contacts, and rheostats.

For convenience of comparison and reference the lettering of the original application is retained in this.

In order that the special matter of the present division may be clearly understood, it is proper to state that the construction of the crane is peculiar in that it comprises a traveling bridge provided with an electric motor for its propulsion, a trolley movable over the bridge, a hoisting-beam mounted in and vertically movable through the trolley, tongs carried by the beam, separate electric motors for propelling the trolley, for actuating the hoisting-beam, and for opening and closing the tongs, and in that all of said motors are controlled from the movable trolley. The construction thus generally stated necessitates special arrangement of circuits, switches, &c., and it is this arrangement that the present divisional application is designed to cover.

Referring now to the drawings, A indicates a bridge or girder of approved construction carried at its ends upon trucks or wheels *e*, which traverse rails or ways, as is usual with bridge-cranes.

B indicates a shaft carried in suitable boxes or hangers secured to bridge A. This shaft carries wheels *b*, which are here represented as pinions or gear-wheels, but which may be the truck-wheels *e* or any others which, being rotated, shall cause the travel of the bridge A along its track or way.

Shaft B receives motion directly or indirectly from an electric motor C, carried by bridge A, intermediate gearing being represented and preferably employed for reasons well understood.

D indicates a trolley movable over the bridge or girder A and provided with an electric motor E for its propulsion, which motor, being fixed upon the trolley, travels with it.

H indicates the hoisting bar or beam, which is raised and lowered by the operation of an electromotor F, likewise secured upon and movable with the trolley, the gearing connecting the motor and the beam not being shown in this case, but being merely toothed gearing taking into a rack-bar extending lengthwise of said bar or beam H. Motor F is furnished with a magnetic brake G, which is here represented as of the construction set forth in Letters Patent No. 461,052, granted to me and bearing date October 13, 1891, but which may be of any other suitable construction.

Carried by and at the lower end of hoisting-beam H is a pair of tongs M, which may be of any approved construction. Extending longitudinally of the bar or beam H is a rod or shaft K, the upper end of which is encircled by a nut suitably swiveled in the upper end of the bar or beam H, which nut is furnished with a gear-wheel L, through which rotary motion is received from an electromotor N, secured to and carried by the bar or beam H.

It is not necessary here to give description